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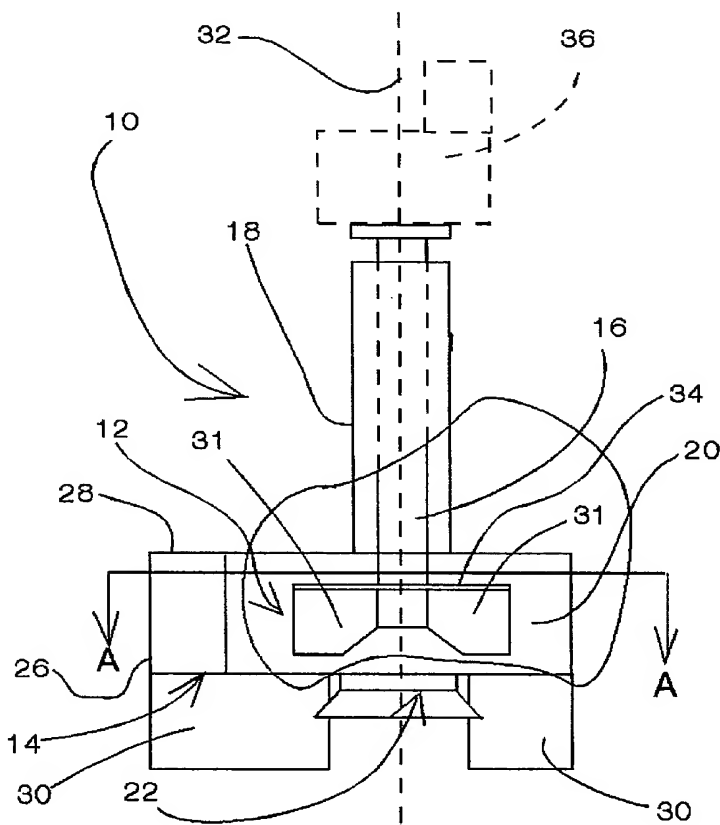
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(54) Title: SUBMERSIBLY OPERABLE HIGH VOLUME AND LOW PRESSURE LIQUID TRANSFER EQUIPMENT



(57) Abstract: Submersibly installable and operable high volume and low pressure stirrer type liquid transferring equipment (10) comprises a rotor type stirrer (12) driven via a drive shaft (16) passing without making contact along a sleeve (18) rooting centrally in a housing (14) having a downwardly facing inlet (22) and a tangentially arranged outlet (24). As the casing (26) of the housing (14) is independent of the remainder of the equipment (10) it is fitted with elevating leg plates (30). Its operative location is accommodated by a location of equipment installation. The stirrer (12) is bolted to a drive assembly (36) via its shaft (16). The length of the sleeve (18) is established in conjunction with the circumstances of use of the equipment (10) to maintain the zone (20) encompassed by the housing (14) sealed from above by a liquid seal.

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B. FIELDS SEARCHED

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Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 416 549 A (KRETSCHMER ET AL) 22 November 1983 (1983-11-22) the whole document	1-30
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2 987 186 A (BURGOON DAVID W ET AL) 6 June 1961 (1961-06-06) the whole document -----	1-30
A	DE 195 35 881 A1 (A.I.T. ABWASSERSYSTEME GMBH, 87740 BUXHEIM, DE) 3 April 1997 (1997-04-03) the whole document -----	1-30
A	US 6 276 824 B1 (DE JAGER VERNON) 21 August 2001 (2001-08-21) the whole document -----	1-30
A	PATENT ABSTRACTS OF JAPAN vol. 002, no. 157 (M-044), 27 December 1978 (1978-12-27) & JP 53 125602 A (MATSUSHITA ELECTRIC WORKS LTD), 2 November 1978 (1978-11-02) the whole document -----	1-30
A	PATENT ABSTRACTS OF JAPAN vol. 011, no. 080 (C-409), 11 March 1987 (1987-03-11) & JP 61 234995 A (MASAHIKO IRIE; others: 01), 20 October 1986 (1986-10-20) the whole document -----	1-30